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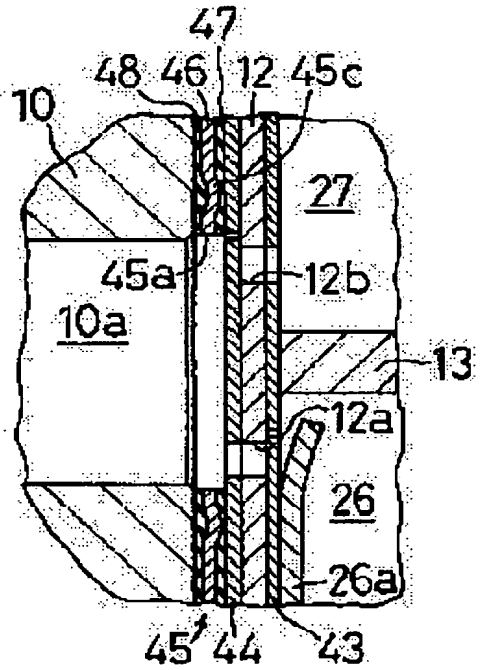
(54) RECIPROCATING COMPRESSOR

(57)Abstract:
PROBLEM TO BE SOLVED: To reduce leaking of a high-pressure refrigerant gas compressed in a cylinder bore from the end face of a cylinder block around the bore and thereby suppress drop of the performance of a compressor resulting from leakage of the refrigerant gas.

SOLUTION: This reciprocating compressor is structured so that a gasket 45 as a sealing member is held pinchedly between a cylinder block 10 and a suction valve 44, wherein the gasket 45 is formed from a metal plate 46 and elastic films of rubber 47 and 48 attached to the end faces of the plate 46 and has a ring-shaped bead part 45c as a seal. The bead part 45 surrounds each bore 10a and is contacted by pressure to the front end face of the suction valve 44 over the whole circumference so as to secure a sealing performance for each bore 10a. Around the bore 10a when a refrigerant gas is compressed in it, it is possible to suppress leakage of high pressure refrigerant gas from the gap between the cylinder block 10 and suction valve 44 or around the gap.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The cylinder block which installed two or more boas, and the ports plate which installed the inhalation hole and discharge opening corresponding to this boa, Housing which partitions off an inhalatorium and a regurgitation room and blockades the outer edge of this cylinder block, The suction valve portion infixed between this cylinder block and this ports plate, and the discharge valve infixed between this housing and this ports plate, In the reciprocation mold compressor equipped with the piston which compresses the refrigerant which reciprocated and inhaled the inside of this boa from this inhalatorium, and carries out the regurgitation to this regurgitation room A seal member is pinched by either [at least] between the above-mentioned cylinder block and the above-mentioned suction valve portion or between the above-mentioned ports plate and this suction valve portion. This seal member The reciprocation mold compressor characterized by being made securable [the seal nature for every ** boa] by the annular seal section which surrounds each above-mentioned boa.
[Claim 2] It is the reciprocation mold compressor according to claim 1 which said seal member consists of a gasket which consists of India rubber film which fixed on the front face of a metal plate and this metal plate, and is characterized by said annular seal section being constituted by the annular toe of bead formed by curving this metal plate in a convex bead configuration partially.
[Claim 3] Said seal member is a reciprocation mold compressor according to claim 1 characterized by consisting of an O ring arranged for every boa so that each aforementioned boa might be surrounded.
[Claim 4] The reciprocation mold compressor according to claim 1 characterized by carrying out the regurgitation of the regurgitation gas by the supercritical pressure of a refrigerant.
[Claim 5] Said refrigerant is a reciprocation mold compressor according to claim 4 characterized by being a carbon dioxide.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the reciprocation mold compressor which raised the seal nature for every boa in detail about a reciprocation mold compressor. The reciprocation mold compressor of this invention can be used suitable for the refrigeration systems for car air-conditioning etc.
[0002]
[Description of the Prior Art] Conventionally as a reciprocation mold compressor (only henceforth a "compressor") with which the refrigeration system for car air-conditioning is presented The cylinder block which installed two or more boas, and the ports plate which installed the inhalation hole and discharge opening corresponding to this boa, Housing which partitions off an inhalatorium and a regurgitation room and blockades the outer edge of this cylinder block, The thing equipped with the suction valve portion infixed between this cylinder block and this ports plate, the discharge valve infixed between this housing and this ports plate, and the piston which compresses the refrigerant which reciprocated and inhaled the inside of this boa from this inhalatorium, and carries out the regurgitation to this regurgitation room is known.
[0003] In this compressor, after the refrigerant gas of low-temperature low voltage which returned from the exterior to the inhalatorium when a piston reciprocated the inside of a boa is inhaled and compressed into a boa, it is breathed out by the regurgitation room as a refrigerant gas of elevated-temperature high pressure.
[0004]
[Problem(s) to be Solved by the Invention] In such a compressor, if a high-pressure refrigerant gas may leak and come out of the cylinder block end face of the circumference of a boa in case a refrigerant gas is compressed within a boa, since the amount of the refrigerant gas into which only the part which leaked is compressed will become less, there is a problem that the engine performance of a compressor falls.
[0005] Especially the above-mentioned problem becomes remarkable in the refrigeration system (suitably henceforth "the refrigeration system of a supercritical cycle") which operates so that the high-tension-side pressure (discharge pressure of a compressor) of the closed circuit which constitutes a refrigeration system may turn into a supercritical pressure of a refrigerant. That is, in the compressor in the refrigeration system of a supercritical cycle, a refrigerant gas is compressed to the pressure exceeding the critical pressure of the refrigerant. For example, when the critical pressure uses as a refrigerant the carbon dioxide which is 7.35MPa extent, in a compressor, a refrigerant gas is compressed to the pressure of 10MPa extent. In addition, when a chlorofluocarbon system refrigerant is used as a refrigerant, in a refrigeration system (suitably henceforth "the refrigeration system of a subcritical cycle") which operates by the pressure of under the critical pressure of the refrigerant which in other words uses a discharge pressure and suction pressure, the discharge pressure of a compressor is 1 - 3MPa extent, and the discharge pressure of the compressor in the refrigeration system of a supercritical cycle turns into a very high pressure compared with the thing of the refrigeration system of a subcritical cycle. For this

reason, in the compressor in the refrigeration system of a supercritical cycle, in case a refrigerant gas is compressed within a boa, a high-pressure refrigerant bus leakage-comes to be easy from the cylinder block end face of the circumference of a boa.
[0006] Let it be the technical technical problem which should be solved to make this invention in view of the above-mentioned actual condition, to control the high-pressure refrigerant gas compressed within the boa leaking, and coming out from the cylinder block end face of the circumference of a boa, and to control the degradation of the compressor resulting from the leakage of this refrigerant gas.
[0007]
[Means for Solving the Problem] (1) The cylinder block with which the reciprocation mold compressor according to claim 1 installed two or more boas, The ports plate which installed the inhalation hole and discharge opening corresponding to this boa, and housing which partitions off an inhalatorium and a regurgitation room and blockades the outer edge of this cylinder block, The suction valve portion infixed between this cylinder block and this ports plate, and the discharge valve infixed between this housing and this ports plate, In the reciprocation mold compressor equipped with the piston which compresses the refrigerant which reciprocated and inhaled the inside of this boa from this inhalatorium, and carries out the regurgitation to this regurgitation room A seal member is pinched by either [at least] between the above-mentioned cylinder block and the above-mentioned suction valve portion or between the above-mentioned ports plate and this suction valve portion, and this seal member is characterized by being made securable [the seal nature for every ** boa] by the annular seal section which surrounds each above-mentioned boa.
[0008] In this compressor, the seal member which has the annular seal section which surrounds each boa between a cylinder block and a suction valve portion or in either [at least] between a ports plate and a suction valve portion is pinched. The annular seal section which surrounds each of this boa secures the seal nature for every boa by carrying out a pressure welding to the pinching side which pinches a seal member. For this reason, in case a refrigerant gas is compressed within a boa, it can control that a high-pressure refrigerant gas leaks and comes out of between a cylinder block and suction valve portions etc. to the circumference of each boa by the annular seal section. Therefore, it becomes possible to control the degradation of the compressor resulting from the leakage of this refrigerant gas.
(2) A reciprocation mold compressor according to claim 2 consists of a gasket with which said seal member consists of India rubber film which fixed on the front face of a metal plate and this metal plate in a reciprocation mold compressor according to claim 1, and said annular seal section is characterized by being constituted by the annular toe of bead formed by curving this metal plate in a convex bead configuration partially.
[0009] A seal member consists of a gasket which consists of India rubber film which fixed on the front face of a metal plate and this metal plate, and the annular seal section is constituted from this compressor by the annular toe of bead formed by curving this metal plate in a convex bead configuration partially. For this reason, the annular toe of bead as the annular seal section is in the condition that the India rubber film itself was compressed, and a pressure welding is carried out to the pinching side which pinches this gasket. Thereby, the seal nature for every boa is secured.
(3) A reciprocation mold compressor according to claim 3 is characterized by said seal member consisting of an O ring arranged for every boa so that each aforementioned boa might be surrounded in a reciprocation mold compressor according to claim 1.
[0010] A seal member consists of an O ring arranged for every boa so that each boa might be surrounded in this compressor. The pressure welding of this O ring is carried out to the pinching side which pinches this O ring in the condition of having been compressed. Thereby, the seal nature for every boa is secured.
(4) A reciprocation mold compressor according to claim 4 is characterized by carrying out the regurgitation of the regurgitation gas by the supercritical pressure of a refrigerant in a reciprocation mold compressor according to claim 1.
[0011] Although there is a problem that a high-pressure refrigerant bus is leakage-easy, and

consists of a cylinder block end face of the circumference of a boa as mentioned above when a compressor carries out the regurgitation of the regurgitation gas by the supercritical pressure of a refrigerant, it can control that a high-pressure refrigerant gas leaks and comes out of between a cylinder block and suction valve portions etc. by securing the seal nature for every boa in the annular seal section of a seal member as above-mentioned. Therefore, even if it is the case where a compressor carries out the regurgitation of the regurgitation gas by the supercritical pressure of a refrigerant, it becomes possible to control the degradation of the compressor resulting from the leakage of the refrigerant gas from the circumference of a boa.
(5) A reciprocation mold compressor according to claim 5 is characterized by said refrigerant being a carbon dioxide in a reciprocation mold compressor according to claim 4.
[0012]
[Embodiment of the Invention] Hereafter, the operation gestalt which materialized this invention is explained, referring to a drawing.
(Operation gestalt 1) The compressor 1 shown in drawing 1 is a refrigeration system for car air-conditioning, and the refrigeration system of a supercritical cycle is presented with it. That is, this refrigeration system operates so that the accumulator as the evaporator and vapor-liquid-separation machine as a compressor 1, the gas cooler as a heat exchanger for heat dissipation which is not illustrated, the expansion valve as a diaphragm means, and a heat exchanger for endoergic may consist of a closed circuit by which series connection was carried out and it may become the supercritical pressure of the refrigerant with which the discharge pressure (high-tension-side pressure of this circuit) of a compressor circulates through this circuit. And the carbon dioxide (CO2) is used as a refrigerant. In addition, as a refrigerant, ethylene (C two H4), day borane (B-2 H6), ethane (C two H6), nitrogen oxide, etc. are [besides a carbon dioxide (CO2)] also employable.
[0013] In this compressor 1, the front housing 11 is joined to the front end side of a cylinder block 10, ports-plate 12 grade is pinched and the rear housing 13 is joined to the back end side of a cylinder block 10. In the crank case 14 formed by the front housing 11 and the cylinder block 10, the driving shaft 15 fixed to the armature of the electromagnetic clutch which an end extends from the front housing 11 and is not illustrated is held, and the driving shaft 15 is supported pivotable by the shaft-seal equipment and radial bearing which were prepared between the front housing 11 and a cylinder block 10. In addition, between the other end of a driving shaft 15, and ports-plate 12 grade, the thrust bearing and flat spring which are not illustrated intervene. Moreover, six boa 10a is drilled in the location which encloses a driving shaft 15 in a cylinder block 10, and the piston 16 is held in each boa 10a, respectively.
[0014] the inside of a crank case 14 — setting — a driving shaft 15 — Rota 18 — between the front housing 11 — thrust bearing — minding — a driving shaft 15 and a synchronization — it fixes pivotable — having — the back in Rota 18 — the hinge device 19 — a swash plate 20 — Rota 18 and a synchronization — it moors pivotable. Moreover, the sleeve 21 is formed in the peripheral surface of the driving shaft 15 in a crank case 14 possible [sliding], and the swash plate 20 is moored to pivot 21a which protruded on the sleeve 21 rockable. The rocking cam plate 23 is moored to this swash plate 20 through the thrust bearing 22 grade, and the baffle pin which can slide only on shaft orientations and which is not illustrated has fixed the inside of baffle slot 11a of the front housing 11 to the rocking cam plate 23. The rod 24 is moored between the rocking cam plate 23 and each piston 16, and, thereby, each piston 16 is made possible by reciprocation according to the inclination of the rocking cam plate 23 in the inside of each boa 10a.
[0015] The press spring 25 is equipped between the sleeve 21 and the circlip fixed to the driving shaft 15 by the side of a cylinder block 10. And Rota 18 and contact are attained for a swash plate 20 with this press spring 25, and, thereby, the rocking cam plate 23 is maintained by the maximum inclination at the time of starting. Moreover, where the press spring 25 is reduced most, maintenance of the minimum inclination is attained for the rocking cam plate 23.
[0016] Moreover, within the rear housing 13, the regurgitation room 26 is formed in a central site, and the inhalatorium 27 is formed in the outside of this regurgitation room 26. And each compression space in which the end face of each piston 16 forms the partial cross-section

section which expanded the important section of a compressor 1 between each boa 10a as shown in drawing 2 , and the regurgitation room 26 are opened for free passage by each discharge opening 12a formed in the ports plate 12, and each discharge opening 12a is made possible by closing motion by the discharge valve 43 by which opening is regulated by retainer 26a at the regurgitation room 26 side. Moreover, each compression space and an inhalatorium 27 are opened for free passage by each inhalation hole 12b formed in the ports plate 12, and each inhalation hole 12b is made possible by closing motion by the suction valve portion 44 at each compression space side. In addition, an inhalatorium 27 is connected to the accumulator which constitutes the frozen circuit of a refrigeration system through piping, and the regurgitation room 26 is connected to the gas cooler which constitutes the frozen circuit of a refrigeration system through piping.

[0017] Furthermore, while the bleeding path 28 which opens a crank case 14 and an inhalatorium 27 for free passage is formed in the rear housing 13, the ports plate 12, and the cylinder block 10 grade, the air-supply path 29 as a control path which opens the regurgitation room 26 and a crank case 14 for free passage is formed, and the control valve 30 is equipped in the middle of the air-supply path 29 in the rear housing 13.

[0018] The inlet pressure room 31 and the discharge-pressure room 32 confront each other, and are established in this control valve 30, and the inlet pressure room 31 is made to open [inhalatorium / 27] the discharge-pressure room 32 for free passage with the regurgitation room 26 through a through-hole 34 again through a through-hole 33, respectively. And the elastic bellows 36 is formed in the inlet pressure room 31 so that the atmospheric-pressure room 35 arranged in the core may be surrounded, and this bellows 36 is always energized in the expanding direction (discharge-pressure room 32 directions) through the spring 37. The port 39 which the valve port 38 was formed in the discharge-pressure room 32 at the end of inlet pressure room 31 approach, and was partitioned off by this valve port 38 by standing in a row on the other hand is opened for free passage by the crank case 14 via the air-supply path 29. Moreover, the end face of a valve lever 40 is connected with the above-mentioned bellows 36, and it extends in the discharge-pressure room 32 directions, and the tip is prepared so that a port 39 and a valve port 38 may be penetrated and it may face in the discharge-pressure room 32. And it is made to counter at the tip of this valve lever 40 with a valve port 38, and a valve element 41 is attached, and this valve element 41 is always energized in the valve port 38 direction (the direction of closing) with the spring 42 infixed in the discharge-pressure room 32 while it is constituted possible [closing motion actuation] through a flexible operation of bellows 36. Therefore, if the inhalatorium pressure introduced into the inlet pressure room 31 declines rather than the set point, with expanding of bellows 36, will **** a valve lever 40, a valve element 41 will be made to open, and a regurgitation refrigerant gas will be supplied to a crank case 14 via a port 39 and the air-supply path 29 from a valve port 38.

[0019] Therefore, in this compressor, rotation of a driving shaft 15 is changed into rocking before and after the rocking cam plate 23 through a swash plate 20, and it is breathed out at the regurgitation room 26, the refrigerant gas inhaled into boa 10a from the inhalatorium 27 when a piston 16 reciprocated the inside of boa 10a being compressed. And according to the differential pressure of the crank case pressure and inhalatorium pressure which are controlled by the control valve 30 based on a cooling load, the stroke of a piston 16 and the inclination of the rocking cam plate 23 change, and discharging volume is controlled.

[0020] As the characteristic configuration of this compressor 1 is shown in drawing 2 , the gasket 45 as a seal member is pinched between the back end side of a cylinder block 10, and the front end side of a suction valve portion 44. As this gasket 45 shows the top view of the condition before pinching between a cylinder block 10 and a suction valve portion 44 to drawing 3 and shows it to drawing 4 , the A-A line view sectional view of drawing 3 It consists of a disk type-like metal plate 46 and India rubber film 47 and 48 which fixed to the both-ends side of this metal plate 46, respectively, and six through tube 45a is installed through each boa 10a of a cylinder block 10, and the corresponding location in the magnitude of this boa 10a and an abbreviation EQC, respectively. In addition, six drilled hole 45b between each through tube 45a installed a little outside is a run through hole for the bolt which concludes a cylinder block 10

and rear housing 13 grade. And annular toe-of-bead 45c as the annular seal section which surrounds each boa 10a is formed in the surroundings of each through tube 45a, respectively. This annular toe-of-bead 45c forms a metal plate 46 by curving in a convex bead configuration partially. Any of a convex are sufficient as annular toe-of-bead 45c at a convex and cylinder block 10 side at a suction valve portion 44 side.

[0021] The above-mentioned annular toe-of-bead 45c is in the condition before pinching a gasket 45 between a cylinder block 10 and a suction valve portion 44, and is about 2mm in height of about 0.2mm, and width of face. And in the condition after pinching a gasket 45 between a cylinder block 10 and a suction valve portion 44 and attaching to a compressor 1, the protrusion point of annular toe-of-bead 45c is crushed a little by carrying out a pressure welding to the perimeter covering the front end side of the pinching side slack suction valve portion 44. In the state of this pinching, it is the near India rubber film 47 with which annular toe-of-bead 45c projects, and between the suction valve portion 44 and the metal plate 46, the India rubber film 47 of a wrap part crosses the protrusion point of annular toe-of-bead 45c to the perimeter, and it is compressed and pinched.

[0022] In the compressor 1 constituted as mentioned above, if rotation of the engine which is not illustrated as a driving source is transmitted to a driving shaft 15 with an electromagnetic clutch, synchronizing with Rota 18, a swash plate 20 will rotate under a predetermined inclination by rotation of this driving shaft 15, and only rocking movement of a swash plate 20 will be transmitted to the rocking cam plate 23. For this reason, a piston 16 reciprocates the inside of cylinder 10a through a rod 24 by rocking movement of the rocking cam plate 23. After this compresses the refrigerant in an inhalatorium 27 into compression space, the regurgitation is carried out to the regurgitation room 26.

[0023] Under the present circumstances, with the refrigeration system concerning this operation gestalt which uses a carbon dioxide as a refrigerant, a compressor carries out the regurgitation of the regurgitation gas by the supercritical pressure (pressure of 10MPa extent) of a refrigerant. Since especially the discharge pressure is high in this case, there is a problem that a high-pressure refrigerant bus leakage-comes to be easy from cylinder block 10 end face of the circumference of boa 10a. In the compressor 1 of this point and this operation gestalt, by each annular toe-of-bead 45c of a gasket 45 surrounding the surroundings of each boa 10a, and carrying out the pressure welding of each annular toe-of-bead 45c to the front end side of a suction valve portion 44 over the perimeter, the India rubber film 47 of a wrap part crosses the protrusion point of each annular toe-of-bead 45c to the perimeter, and it is compressed and pinched between the suction valve portion 44 and the metal plate 46. For this reason, in this compressor 1, the seal nature of each boa 10a of every can be secured by annular toe-of-bead 45c, and it becomes possible to control that a high-pressure refrigerant gas leaks from between a cylinder block 10 and suction valve portions 44. Therefore, even if it is the case where a compressor 1 carries out the regurgitation of the regurgitation gas by the supercritical pressure of a refrigerant, the degradation of the compressor 1 resulting from the leakage of the refrigerant gas from the circumference of boa 10a can be controlled.

[0024] (Operation gestalt 2) The compressor 1 of this operation gestalt 2 makes the seal member which can secure the seal nature of each boa 10a of every pinch by the annular seal section which surrounds each boa 10a for the partial cross-section section which expanded the important section to the both sides between a cylinder block 10 and a suction valve portion 44 and between a ports plate 12 and a suction valve portion 44 as shown in drawing 5 .

[0025] That is, in this compressor 1, between a cylinder block 10 and a suction valve portion 44, the gasket 45 as a seal member is pinched like the above-mentioned operation gestalt 1, and O ring 49 as a seal member is pinched also between the ports plate 12 and the suction valve portion 44. This O ring 49 is arranged in each boa 10a of every so that each boa 10a may be surrounded. O ring 49 is arranged, respectively in each circular-sulcus 12c specifically engraved, respectively so that each boa 10a might be surrounded in the front end side of the ports plate 12 by the side of a suction valve portion 44. And where a ports plate 12, a suction valve portion 44, and gasket 45 grade are pinched between a cylinder block 10 and the rear housing 13, O rings each are compressed and pinched between a ports plate 12 and a suction valve portion 44,

and the pressure welding of the end face of O ring 49 by the side of a suction valve portion 44 is carried out to a suction valve portion 44 over the perimeter. In addition, the end face of O ring 49 by the side of this suction valve portion 44 functions as the annular seal section.

[0026] Other configurations are the same as that of the above-mentioned operation gestalt 1. Since this compressor pinches O ring 49 as a seal member also between a ports plate 12 and a suction valve portion 44 while pinching the gasket 45 same between a cylinder block 10 and a suction valve portion 44 as the above-mentioned operation gestalt 12, it can control exsorption of a refrigerant gas between a ports plate 12 and a suction valve portion 44. Therefore, in this compressor 1, the seal nature of each boa 10a of every can be secured further, and it becomes possible to control more certainly the degradation of the compressor 1 resulting from the leakage of the refrigerant gas from the circumference of boa 10a.

[0027] (Operation gestalt 3) The compressor 1 of this operation gestalt 3 makes O ring 49 as a seal member which can secure the seal nature of each boa 10a of every pinch by the annular seal section which surrounds each boa 10a for the partial cross-section section which expanded the important section between a cylinder block 10 and a suction valve portion 44 as shown in drawing 6 .

[0028] That is, in this compressor 1, O ring 49 is pinched between a cylinder block 10 and a suction valve portion 44, and O ring 49 is arranged in each boa 10a of every so that each boa 10a may be surrounded. O ring 49 is arranged, respectively in each circular-sulcus 10b specifically engraved, respectively so that each boa 10a might be surrounded in the back end side of the cylinder block 10 by the side of a suction valve portion 44. And where a ports plate 12, a suction valve portion 44, and gasket 45 grade are pinched between a cylinder block 10 and the rear housing 13, O rings each are compressed and pinched between a ports plate 12 and a suction valve portion 44, and the pressure welding of the end face of O ring 49 by the side of a suction valve portion 44 is carried out to a suction valve portion 44 over the perimeter. In addition, the end face of O ring 49 by the side of this suction valve portion 44 functions as the annular seal section.

[0029] Other configurations are the same as that of the above-mentioned operation gestalt 1. The compressor 1 of this operation gestalt can also secure the seal nature of each boa 10a of every with O ring 49, and becomes possible [controlling that a high-pressure refrigerant gas leaks from between a cylinder block 10 and suction valve portions 44]. [as well as the above-mentioned operation gestalt 1] Therefore, even if it is the case where a compressor 1 carries out the regurgitation of the regurgitation gas by the supercritical pressure of a refrigerant, the degradation of the compressor 1 resulting from the leakage of the refrigerant gas from the circumference of boa 10a can be controlled.

[0030] (Operation gestalt 4) The compressor 1 of this operation gestalt 4 makes O ring 49 as a seal member which can secure the seal nature of each boa 10a of every pinch by the annular seal section which surrounds each boa 10a for the partial cross-section section which expanded the important section to the both sides between a cylinder block 10 and a suction valve portion 44 and between a ports plate 12 and a suction valve portion 44 as shown in drawing 7 .

[0031] That is, in this compressor 1, between a cylinder block 10 and a suction valve portion 44, O ring 49 as a seal member is pinched like the above-mentioned operation gestalt 3, and O ring 49 as a seal member is pinched between the ports plate 12 and the suction valve portion 44 as well as the above-mentioned operation gestalt 2. Other configurations are the same as that of the above-mentioned operation gestalt 1.

[0032] Therefore, like the above-mentioned operation gestalt 2, this compressor 1 can secure further the seal nature of each boa 10a of every, and becomes possible [controlling more certainly the degradation of the compressor 1 resulting from the leakage of the refrigerant gas from the circumference of boa 10a]. In addition, although the above-mentioned operation gestalt explained the example applied to the refrigeration system of the supercritical cycle which used the carbon dioxide as a refrigerant, as for the compressor of this invention, it is needless to say that it can apply to the refrigeration system of the subcritical cycle which uses a chlorofluocarbon system refrigerant etc. as a refrigerant.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing of longitudinal section of the reciprocation mold compressor of the operation gestalt 1.
[Drawing 2] It is the partial expanded sectional view which expanded the important section of the reciprocation mold compressor concerning the operation gestalt 1.
[Drawing 3] The operation gestalt 1 is started and it is the top view of the gasket as a seal member.
[Drawing 4] The operation gestalt 1 is started, and it is the fragmentary sectional view of the above-mentioned gasket, and is the A-A line view sectional view of drawing 3 .
[Drawing 5] It is the partial expanded sectional view which expanded the important section of the reciprocation mold compressor concerning the operation gestalt 2.
[Drawing 6] It is the partial expanded sectional view which expanded the important section of the reciprocation mold compressor concerning the operation gestalt 3.
[Drawing 7] It is the partial expanded sectional view which expanded the important section of the reciprocation mold compressor concerning the operation gestalt 4.
[Description of Notations]
10 -- Cylinder block 10a -- Boa 12 -- Ports plate
12a -- Discharge opening 12b -- Inhalation hole 13 -- Rear housing
16 -- Piston 26 -- Regurgitation room 27 -- Inhalatorium
43 -- Discharge valve 44 -- Suction valve portion
45 -- Gasket as a seal member
45c -- Annular toe of bead as the annular seal section
49 -- O ring as a seal member

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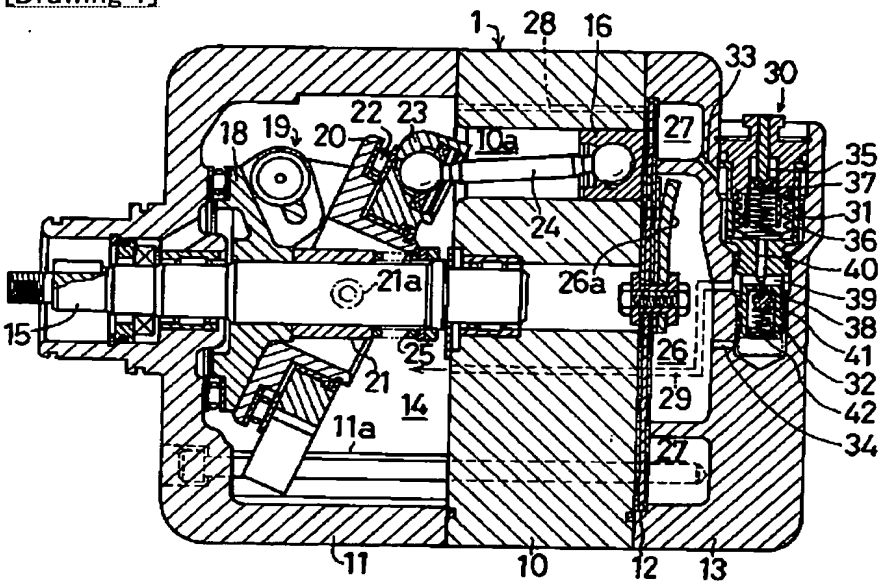
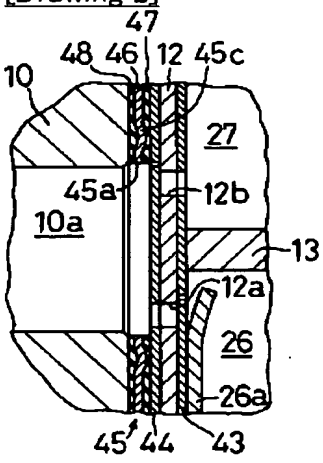
DRAWINGS

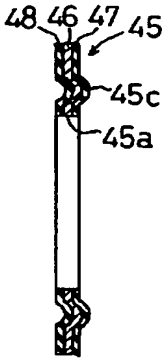
[Drawing 1]



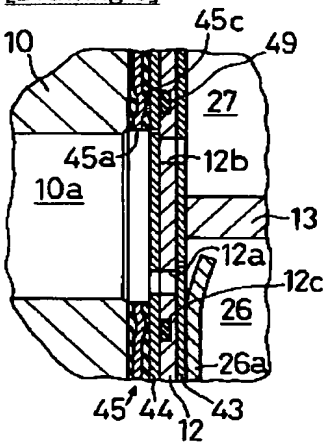
[Drawing 2]



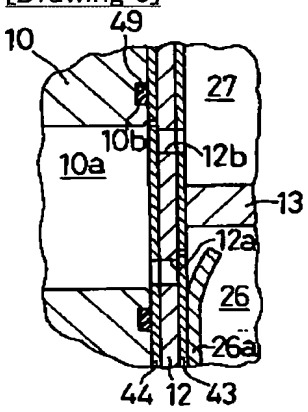
[Drawing 4]



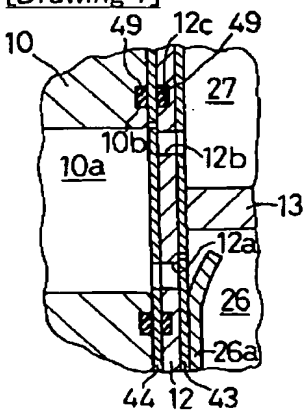
[Drawing 5]



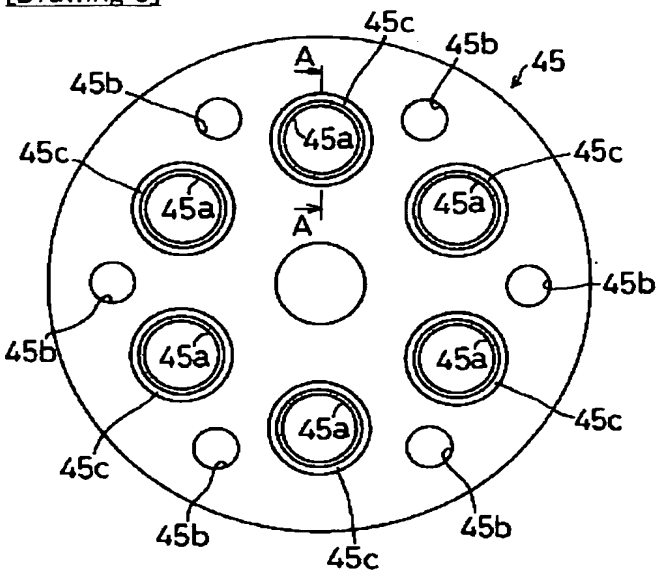
[Drawing 6]



[Drawing 7]



[Drawing 3]



[Translation done.]